

# ABSTRACT

The present invention is a method and apparatus to remove the adverse effects due to the imbalance between in-phase (I) and quadrature (Q) channels for I-Q demodulators and modulators in multi-carrier systems. A first balancer generates a first balancing signal from a first signal of a first index corresponding to a first frequency. A first combiner combines the first balancing signal and a second signal of a second index corresponding to a second frequency. The second frequency is symmetrical to the first frequency with respect to a center frequency in a multi-carrier composite signal. The first combiner generates a first balanced signal corresponding to the second frequency.